

WHAT IS CLAIMED IS:

1. A method of manufacturing a magnetic recording medium, comprising:
  - (a) providing a non-magnetic substrate for a magnetic medium, said substrate including at least one major surface having a contact start/stop (CSS) or landing zone and a data zone; and
  - 5 (b) forming a pattern of recesses in said substrate surface in said CSS or landing zone by embossing utilizing a stamper having a surface including a negative image pattern of said pattern of recesses.
2. The method according to claim 1, wherein:
  - step (a) comprises providing an annular disk-shaped substrate wherein said CSS or landing zone comprises an annularly-shaped zone adjacent an inner or outer diameter of said disk and said data zone comprises an annularly-shaped zone radially adjacent said CSS or
  - 5 landing zone.
3. The method according to claim 1, wherein:
  - step (b) comprises forming a rectangularly- or sinusoidally-shaped pattern of recesses.
4. The method according to claim 3, wherein:
  - step (b) comprises forming a rectangularly-shaped pattern of recesses, wherein each of the dimensions of the rectangles of said pattern is in the range of from about 0.1 to about 10  $\mu\text{m}$  and the depth of each of the recesses is in the range of from about 10 to about 200  $\text{\AA}$ .
5. The method according to claim 3, wherein:
  - step (b) comprises forming a sinusoidally-shaped pattern of recesses, wherein the peak-to-peak spacings of adjacent recesses is in the range of from about 0.1 to about 10  $\mu\text{m}$  and the depth of each of the recesses is in the range of from 10 to about 200  $\text{\AA}$ .
6. The method according to claim 1, wherein:
  - step (a) comprises providing a substrate comprised of a material selected from the group consisting of Al, Al/NiP, Al-based alloys, other metals, other metal alloys, polymers,

and polymer-based materials, or a high modulus, hard-surfaced substrate selected from the  
 5 group consisting of glass, ceramics, and glass-ceramics.

7. The method according to claim 6, wherein:

step (a) comprises providing a glass, ceramics, or glass-ceramics substrate, wherein  
 step (a) further comprises forming a sol-gel layer on at least said substrate surface in said CSS  
 or landing zone, said sol-gel layer having a surface which is softer than said substrate surface;  
 5 and

step (b) comprises embossing said pattern of recesses in said surface of said sol-gel  
 layer, wherein step (b) further comprises converting the embossed sol-gel layer to a glass or  
 glass-like layer including said pattern of recesses in said surface thereof.

8. The method according to claim 7, wherein:

step (a) comprises forming a sol-gel layer comprising a porous layer of  $\text{SiO}_2$   
 containing water and at least one solvent in the pores thereof; and

step (b) comprises converting said sol-gel layer to said glass or glass-like layer by  
 5 sintering at a temperature of from about 300 to above about 1000°C.

9. The method according to claim 1, wherein:

step (b) comprises simultaneously forming said pattern of recesses in said substrate  
 surface in said CSS or landing zone and forming a servo pattern in said substrate surface in  
 said data zone; and

5 step (b) comprises embossing utilizing a stamper having a surface including negative  
 image patterns of said pattern of recesses and said servo pattern.

10. The method according to claim 1, further comprising the step of:

(c) forming a stack of thin film layers over at least said substrate surface in said data  
 zone, said stack of layers including at least one ferromagnetic recording layer.

11. A magnetic recording medium, comprising:

a non-magnetic substrate including at least one major surface having a contact  
 start/stop (CSS) or landing zone and a data zone, said substrate surface in said CSS or landing  
 zone comprising an embossed pattern of recesses.

12. The magnetic recording medium as in claim 11, wherein:

said substrate is annular disk-shaped, said CSS or landing zone comprises an annularly-shaped zone adjacent an inner or outer diameter of said disk, and said data zone comprises an annularly-shaped zone radially adjacent said CSS or landing zone.

13. The magnetic recording medium as in claim 11, wherein:

said pattern of recesses comprises a plurality of rectangularly-shaped recesses, wherein each of the dimensions of the rectangles of said pattern is in the range of from about 0.1 to about 10  $\mu\text{m}$  and the depth of each of the recesses is in the range of from about 10 to about  
5 200 Å.

14. The magnetic recording medium as in claim 11, wherein:

said pattern of recesses comprises a plurality of sinusoidally-shaped recesses, wherein the peak-to-peak spacings of adjacent recesses is in the range of from about 0.1 to about 10  $\mu\text{m}$  and the depth of each of the recesses is in the range of from 10 to about 200 Å.

15. The magnetic recording medium as in claim 11, wherein:

said substrate is comprised of a material selected from the group consisting of Al, Al/NiP, Al-based alloys, other metals, other metal alloys, polymers, and polymer-based materials, or a high modulus, hard-surfaced substrate selected from the group consisting of  
5 glass, ceramics, and glass-ceramics.

16. The magnetic recording medium as in claim <sup>15</sup>~~16~~, wherein:

said substrate comprises glass, ceramics, and glass-ceramics and further includes a glass or glass-like layer on at least said substrate surface in said CSS or landing zone, said glass or glass-like layer being derived from a sol-gel layer and including a surface with said  
5 pattern of recesses formed therein.

17. The magnetic recording medium as in claim 11, wherein:

said substrate surface in said data zone comprises an embossed servo pattern.

18. The magnetic recording medium as in claim 11, comprising:

a stack of thin film layers formed over at least said substrate surface in said data zone, said stack of layers including at least one ferromagnetic recording layer.

19. A stamper for embossing at least one pattern of recesses in a surface of a substrate for a magnetic recording medium, said substrate surface including spaced-apart landing and data zones, said stamper comprising:

- (a) a main body including a surface; and
- 5 (b) means for embossing a pattern of recesses in said landing zone of said substrate surface.

20. The stamper as in claim 19, further comprising:

- (c) means for simultaneously embossing a servo pattern in said data zone of said substrate surface.